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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/864,984	05/24/2001	Jaakko Vihriala	297-010345-US (PAR)	2631

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EXAMINER	
WARE, CICELY Q	

ART UNIT	PAPER NUMBER
2634	7

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/864,984	VIHRIALA, JAAKKO	
	Examiner	Art Unit	
	Cicely Ware	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,14-21 and 23-28* is/are rejected.

7)☒ Claim(s) *9-13 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because

a. Pg. 24, examiner suggests applicant delete line 20.

Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities:

a. Pg. 1, line 15, applicant uses the phrase "Anothe type". Examiner suggests using "Another type" for clarification purposes.

b. Pg. 1, line 17, applicant uses the phrase "fading channles". Examiner suggests using "fading channels" for clarification purposes.

c. Pg. 1, line 23, applicant uses the phrase "that use a signal equalizers and Rrke receivers". Examiner suggests using "that use signal equalizers and Rake receivers" for clarification purposes.

d. Pg. 1, line 31, applicant uses the phrase "singnal path". Examiner suggests using "signal path" or clarification purposes.

e. Pg. 2, line 19, examiner suggests applicant delete the second instance "some".

f. Pg. 2, lines 30-31, applicant uses the phrase "in a satellite communication systems". Examiner suggests using "in a satellite communication system" for clarification purposes.

g. Pg. 3, lines 26-27, applicant uses the phrase "but this kind of equalizers". Examiner suggests using "but these kind of equalizers".

Appropriate correction is required.

3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claims 1 and 9 are objected to because of the following informalities:

a. Examiner suggests applicant use numbers (1,2,3...) or letters (a, b, c....) to reference the steps of the corresponding method.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 5, 7, 8, 14, 18, 20, 21, 23, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al. (US Patent 6,363,102) in view of De Gaudenzi et al. (US Patent 6,466,566).

(1) With regard to claim 1, Ling et al. discloses a method for compensating a

frequency offset in processing a received radio signal, wherein the receiving and the processing comprises the steps of receiving a radio signal having a carrier frequency from a radio channel, converting the baseband signal into digital samples producing a radio channel estimation data, correcting the phase of the baseband signal on the basis of the channel estimation data, characterized in that the method further comprises the steps of: detecting phases from successive channel estimation data, generating a complex phasor on the basis of said detected phases, and multiplying the baseband signal with said complex phasor for reducing the frequency offset of the baseband signal (col. 2, lines 6-13, col. 3, lines 1-41, 60-67, col. 4, lines 1-35).

However Ling et al. does not disclose producing a local oscillator signal, wherein there is a frequency offset between the carrier frequency of the received radio signal and the frequency of the local oscillator signal, mixing the received radio signal with the local oscillator signal for producing a baseband signal.

However De Baudenzi et al. discloses producing a local oscillator signal, wherein there is a frequency offset between the carrier frequency of the received radio signal and the frequency of the local oscillator signal, mixing the received radio signal with the local oscillator signal for producing a baseband signal (Fig. 1 (16, 21, 11), col. 7, lines 51-55).

Therefore it would have been obvious to one of ordinary skill in the art to modify Ling et al. to incorporate producing a local oscillator signal, wherein there is a frequency offset between the carrier frequency of the received radio signal and the frequency of the local oscillator signal, mixing the received radio signal with the local oscillator signal

for producing a baseband signal in order to provide blind adaptive receiver for CDMA signals with minimizes the detrimental effect of multiple access interference on the bit error rate performance and which does not require using a known training sequence (De Gaudenzi et al., col. 3, lines 1-5).

(2) With regard to claim 5, claim 5 inherits all the limitations of claim 1. Ling et al. further discloses that the radio channel estimate data is made on the basis of the baseband signal that has been multiplied with a complex phasor for frequency offset correction (col. 3, lines 1-41, 60-67, col. 4, lines 1-35).

(3) With regard to claim 7, claim 7 inherits all the limitations of claim 5. Ling et al. further discloses in (Fig. 3) that the after the step of detecting phases (220) the method comprises a step of forming a phase derivative (140) signal on the basis of successive detected phase values (250), and a step of low pass filtering (160) the derivated data (Fig. 4, Fig. 6, col. 5, lines 58-62).

(4) With regard to claim 8, claim 8 inherits all the limitations of claim 5. Ling et al. further discloses in (Fig. 3) that before the step of generating a complex phasor (220) on the basis of said detected phases (250) the method further comprises a step of integrating (Fig. 10 (340), Fig. 9 (325)).

(5) With regard to claim 14, claim 14 inherits all the limitations of claim 1.

(6) With regard to claim 18, claim 18 inherits all the limitations of claim 14. Ling et al. further discloses in (Fig. 3) means for forming the radio channel estimate data (160) is coupled to the output of said means for multiplying the baseband signal with said

complex phasor (220, 250) for reducing the frequency offset of the baseband signal (Fig. 5).

(7) With regard to claim 20,claim 20 inherits all the limitations of claim 14. Ling et al. further discloses in (Fig. 3) a derivator that is coupled to the output of said means for detecting phases (250), and a low pass filter (160), which has an input coupled to the output of said derivator and an output coupled to the input of said means for forming a complex phasor (170) (Fig. 5).

(8) With regard to claim 21, claim 21 inherits all the limitations of claim 14. Ling et al. further discloses in (Fig. 9 (340)) an integrator for integrating the phase detected data, to form an error frequency value for the input of the means for forming a complex phasor (Fig. 3, (250, 220)).

(9) With regard to claim 23, claim 23 inherits all the limitations of claim 14. Ling et al. further discloses in (Fig. 4) a derivator for forming a phase derivative signal on the basis of successive detected phase values (Fig. 3 (140, 250, 220)).

(10) With regard to claim 27, claim 27 inherits all the limitations of claim 1. Ling et al. further discloses a mobile station including an arrangement for receiving a radio signal and compensating a frequency offset in processing the received radio signal (col. 3, lines 34-47).

(11) With regard to claim 28, claim 28 inherits all the limitations of claim 1. Ling et al. further discloses a base station including an arrangement for receiving a radio signal and compensating a frequency offset in processing the received radio signal (col. 4, lines 1-35).

7. Claims 2-4, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al. (US Patent 6,363,102) in combination with De Gaudenzi et al. (US Patent 6,466,566) as applied to claims 1 and 14 above, and further in view of Dohi et al. (US Patent 5,638,362).

(1) With regard to claim 2, claim 2 inherits all the limitations of claim 1. Ling et al. in combination with De Gaudenzi et al. disclose all the limitations of claim 1 above. However Ling et al. in combination with De Gaudenzi et al. do not disclose wherein the received signal is a spread spectrum signal and the method further comprises the step of despreading the received wideband signal to form a narrowband signal.

However Dohi et al. discloses wherein the received signal is a spread spectrum signal and the method further comprises the step of despreading the received wideband signal to form a narrowband signal (col. 1, lines 8-12, 15-20, 25-27).

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Ling et al. in combination with De Gaudenzi et al. to incorporate wherein the received signal is a spread spectrum signal and the method further comprises the step of despreading the received wideband signal to form a narrowband signal in order provide a phase detector that can perform high accuracy tracking capable of eliminating the square loss resulting from the emphasis of the noise component (Dohi et al., col. 5, lines 45-50).

(2) With regard to claim 3, claim 3 inherits all the limitations of claim 2. Ling et al. further discloses in (Fig. 3(120, 130)) the step of multiplying the baseband signal with

said complex phasor (220) is performed to the wideband signal prior to dispreading (115) (Fig. 5, col. 5, lines 29-37).

(3) With regard to claim 4, claim 4 inherits all the limitations of claim 2. Ling et al. further discloses in (Fig. 3) that the received signal is a spread spectrum signal and the step of multiplying the baseband signal with said complex phasor (220) is performed to the narrowband signal after dispreading (120, 130) (Fig. 5, col. 1, line 8, col. 5, lines 57-61).

(4) With to claim 15, claim 15 inherits all the limitations of claims 14 and 2.

(5) With regard to claim 16, claim 16 inherits all the limitations of claims 15 and 3.

(6) With regard to claim 17, claim 17 inherits all the limitations of claims 15 and 4.

8. Claims 6, 19, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al. (US Patent 6,363,102) in combination with De Gaudenzi et al. (US Patent 6,466,566) as applied to claims 1 and 14 above, and further in view of Subramanian (US Patent 5,361,276).

(1) With regard to claim 6, claim 6 inherits all the limitations of claim 5. Ling et al. in combination with De Gaudenzi et al. disclose all the limitations of claim 5 above. However Ling et al. in combination with De Gaudenzi et al. do not disclose that before the step of detecting phases the method comprises a step of forming a derivative signal on the basis of successive channel estimate data, and a step of low pass filtering the derivated data.

However Subramanian discloses that before the step of detecting phases the method comprises a step of forming a derivative signal on the basis of successive channel estimate data, and a step of low pass filtering the derivated data (col. 12, lines 45-68, col. 13, lines 1-45).

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Ling et al. in combination with De Gaudenzi et al. to incorporate that before the step of detecting phases the method comprises a step of forming a derivative signal on the basis of successive channel estimate data, and a step of low pass filtering the derivated data in order to imply a certain range of frequency offsets for which to produce and accurate estimate (Subramanian, col. 13, lines 31-34).

(2) With regard to claim 19, claim 19 inherits all the limitations of claim 14. Subramanian further discloses a derivator that is coupled to the output of said channel estimator and a low pass filter, which has an input coupled to the output of said derivator and an output coupled to the input of said means for detecting phases (abstract, col. 12, lines 45-68, col. 13, lines 1-68, col. 14, lines 1-6).

(3) With regard to claim 24,claim 24 inherits all the limitations of claim 14. Subramanian further discloses a derivator with its input coupled to the output of said channel estimation means and for forming a derivative signal on the channel estimation data prior to detecting phases (col. 12, lines 45-68).

9. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al. (US Patent 6,363,102) in combination with De Gaudenzi et al. (US Patent 6,466,566) in combination with Dohi et al. (US Patent 5,638,362) as applied to claim 15 above in further view of Subramanian (US Patent 5,361,276).

(1) With regard to claim 25, claim 25 inherits all the limitations of claim 15. Ling et al. in combination with De Gaudenzi et al. in combination with Dohi et al. disclose all the limitations of claim 15 above. However Ling et al. in combination with De Gaudenzi et al. in combination with Dohi et al. do not disclose at least two rake fingers, and means for averaging at least one corresponding signal from the at least two rake fingers for the process of reducing the frequency offset.

However Subramanian discloses at least two rake fingers, and means for averaging at least one corresponding signal from the at least two rake fingers for the process of reducing the frequency offset (Fig. 3 (108), col. 7, lines 30-38, 65-68, col. 8, lines 1-5, col. 12, lines 26-44).

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Ling et al. in combination with De Gaudenzi et al. in combination with Dohi et al. to incorporate at least two rake fingers, and means for averaging at least one corresponding signal from the at least two rake fingers for the process of reducing the frequency offset in order to perform multipath search and acquisition operations (Subramanian, col. 7, lines 35-36).

(2) With regard to claim 26, claim 26 inherits all the limitations of claim 15. Subramanian further discloses means for generating the complex phasor on the basis

of frequency offset estimate values from the at least two rake fingers (Fig. 3 (108, 312A, 306A, 307A, 312B, 306B 307B, 114)).

Allowable Subject Matter

10. Claims 9-13, 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made record of and not relied upon is considered pertinent to applicant's disclosure:

a. Dohi et al. US Patent 5,594,754 discloses a spread spectrum communication receiver.

b. Bergstrom et al. US Patent 6,122,309 discloses a method and apparatus for performing interference suppression using modal moment estimates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 703-305-8326. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Cicely Ware

cqw
June 18, 2004

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
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